February 22, 2016

Argonaut Mine Eastwood Multiple Arch Dam (EMAD)

On December 31, 2015, the Army Corps of Engineers (USACE) performed a structural engineering inspection of the Eastwood Multiple Arch Dam (EMAD) at the Argonaut Mine Site in Jackson, CA. During the inspection, the USACE observed diagonal cracks in several of the buttress walls. The cracks appeared to extend through the concrete wall from one side to the other side near the bottom of the buttress. The USACE was most concerned with the largest diagonal cracks found in two of the tallest buttresses located near the center of the multiple arched dam. Many of the individual arches in the dam have a number of cracks, but the potential failure of buttresses are of the most concern because if multiple arches fail, damage could be significant. The draft report from the USACE on their structural inspection recommended the installation of additional crack gauges on the buttress cracks and close monitoring of those gauges.

Additional measures have been taken to monitor the condition of the dam, to minimize the risk of failure and develop an Emergency Action Plan (EAP). On Scene Coordinator Dan Shane is working with the USACE, several California agencies, the City of Jackson and Amador County to monitor the dam, winterize the site, and conduct emergency action planning in anticipation of heavier than normal precipitation from El Nino events. The Emergency Action Plan provides call down numbers and procedures should an inspection of the dam indicate a decrease in stability. The EAP will be implemented by the City of Jackson and the California Inland Region Office of Emergency Services.

The following is a summary of the federal, state and local agency actions to monitor the stability of the EMAD:

Short Term Actions:

The California Environmental Protection Agency, Department of Toxic Substances Control has assumed responsibility for developing interim actions to control surface run off and to monitor the EMAD. The interim actions include constructing and operating a storm water management system behind the EMAD, conducting structural engineering inspections following large storm events, performing general site inspections encompassing the 60 acre site to monitor surface water accumulation behind the EMAD, taking water level measurements in three piezometers installed by USEPA and taking crack gauge measurements from gauges installed on cracks on the top of the dam. During several precipitation events in January 2016, the passive drain system behind the dam was effective in removing standing water from behind the dam. The precipitation amounts did not trigger the active pumping system.

The Region is planning to conduct a geotechnical investigation and Lidar imagery in support of the DTSC's EMAD retrofit design work. Under OSC Shane's direction the Army Corps of Engineers is providing technical support for dam safety monitoring and inspections and retrofit design work and developing a dam safety monitoring and inspections plan and inspection checklists to be used by DTSC in their monitoring of EMAD stability. The ACE previously installed a series of survey markers and monuments on and near the dam to monitor movement (i.e. sliding, sinking, lifting, tilting, etc.) and they are preparing an Argonaut Mine Tailings Dam Alternative Retrofit Design Phase 2 Analysis Study (35% design) that will be provided to California. The Region has scheduled a meeting with California EPA

and Department of Toxic Substances Control officials for March 1st, to discuss the State's plans for securing funding for the dam retrofit and the schedule for that work.

The National Oceanic and Atmospheric Administration (NOAA) Weather and River Forecast Center is closely monitoring the rainfall data from the on-site weather station and providing weather forecast information to stakeholder agencies.

The California Office of Emergency Services (Cal/OES) is assisting the City of Jackson in developing their emergency action plan.

California Air Resources Board (CARB) is installing and maintaining a remote automated weather station and rain gauge.

The City of Jackson (Public Works and Fire Department) are conducting periodic inspections of the EMAD during and after rain events, cleaning and maintaining the creeks and culvers so that they are free of vegetation and debris and developing and implementing the City's emergency action plan. Amador County Office of Emergency Services is coordinating with Jackson on the City's emergency action plan and revising the County emergency operations plan to include contingencies for incidents such as a failure of the EMAD.

Longer Term Actions: The California Environmental Protection Agency is seeking funding from the state legislature to fund the design and retrofit of the EMAD. In addition, the Region has sent a 'governor's letter' to California proposing to list the Argonaut Mine Site on the National Priorities List. A response from California is expected at the end of January.